

Application No. 09/271,584

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In the Claims

sub
1. (Twice amended) An isolated nucleic acid molecule encoding a PNHX transporter polypeptide or a fragment of a plant polypeptide having Na⁺/H⁺ transporter activity that provides increased salt tolerance in a cell, wherein said nucleic acid molecule is not the sequence of the gene A_TM021B04.4 or complementary to all of the sequence of the gene A_TM021B04.4.

C1
2. (Twice amended) An isolated nucleic acid molecule encoding a PNHX transporter polypeptide or a fragment of a plant polypeptide having Na⁺/H⁺ transporter activity that provides increased salt tolerance in a cell, wherein said nucleic acid molecule is not the sequence of the gene A_TM021B04.4 or complementary to all of the sequence of the gene A_TM021B04.4, comprising a nucleic acid molecule selected from the group consisting of:

(a) a nucleic acid molecule that hybridizes to all or part of a nucleic acid molecule shown in [SEQ ID NO:1], or a complement thereof under moderate or high stringency hybridization conditions, wherein the nucleic acid molecule encodes a PNHX transporter polypeptide or a plant polypeptide having Na⁺/H⁺ transporter activity and capable of increasing salt tolerance in a cell;

(b) a nucleic acid molecule degenerate with respect to (a), wherein the nucleic acid molecule encodes a PNHX transporter polypeptide or a plant polypeptide having Na⁺/H⁺ transporter activity and capable of increasing salt tolerance in a cell.

C2
4. (Twice amended) An isolated nucleic acid molecule encoding a PNHX transporter polypeptide or a fragment of a plant polypeptide having Na⁺/H⁺ transporter activity and that provides increased salt tolerance in a cell, wherein said nucleic acid molecule is not the sequence of the gene A_TM021B04.4 or complementary to all of the sequence of the gene A_TM021B04.4, comprising a nucleic acid molecule selected from the group consisting of:

(a) the nucleic acid molecule of the coding strand shown in [SEQ ID NO:1], or a complement thereof;

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- C2
- (b) a nucleic acid molecule encoding the same amino acid sequence as a nucleotide sequence of (a); and
- (c) a nucleic acid molecule having at least 30% identity with the nucleotide sequence of (a) and which encodes a PNHX transporter polypeptide or a plant polypeptide having Na⁺/H⁺ transporter activity.
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C3 sub D3

5. (Amended) The nucleic acid molecule of any of claims 1 to 4, wherein the PNHX transporter polypeptide comprises an AtNHX transporter polypeptide having Na⁺/H⁺ transporter activity that provides increased salt tolerance in a cell.

C4 sub D3

7. (Twice amended) An AtNHX nucleic acid molecule isolated from *Arabidopsis thaliana* or a fragment thereof encoding a transporter polypeptide having Na⁺/H⁺ transporter activity that provides increased salt tolerance in a cell, wherein said nucleic acid molecule is not the sequence of the gene A_TM021B04.4 or complementary to all of the sequence of the gene A_TM021B04.4.

C5 sub D3

12. (Twice amended) The nucleic acid molecule of any of claims 1 to 4, wherein the PNHX transporter polypeptide extrudes monovalent cations out of the cytosol of a first cell transformed with the nucleic acid molecule of any of claims 1 to 4 to provide the first cell with increased salt tolerance relative to a second non-transformed cell, wherein the monovalent cations are selected from at least one of the group consisting of sodium, lithium and potassium.

C6

13. (Amended) The nucleic acid molecule of claim 12, wherein the cells comprise plant cells.

C7

27. (Amended) A method of producing a genetically transformed plant which expresses PNHX transporter polypeptide, comprising regenerating a genetically transformed plant from the plant cell, seed or plant part of claim 21.

C8 sub D3

28. (Twice amended) The method of claim 26, wherein the genome of the host cell also comprises a functional PNHX gene.

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29. (Twice amended) The method of claim 26, wherein the genome of the host cell does not comprise a functional PNHX gene.

31. (Twice amended) A method for expressing a PNHX transporter polypeptide in the host cell of claim 19, the method comprising culturing the host cell under conditions suitable for gene expression.

53. (Twice amended) A method of producing a genetically transformed plant which expresses or overexpresses a PNHX transporter polypeptide or a plant polypeptide having Na^+/H^+ transporter activity and provides increased salt tolerance in a cell, wherein said nucleic acid molecule is not the sequence of the gene A_TM021B04.4 or complementary to all of the sequence of the gene A_TM021B04.4, and wherein the plant has increased salt tolerance, comprising:

(a) cloning or synthesizing a PNHX nucleic acid molecule or a nucleic acid molecule which codes for a plant Na^+/H^+ transporter polypeptide, wherein the polypeptide is capable of providing salt tolerance to a plant and wherein said nucleic acid molecule is not the sequence of the gene A_TM021B04.4 or complementary to all of the sequence of the gene A_TM021B04.4;

(b) inserting the nucleic acid molecule in a vector so that the nucleic acid molecule is operably linked to a promoter;

(c) inserting the vector into a plant cell or plant seed;

(d) regenerating the plant from the plant cell or plant seed, wherein salt tolerance in the plant is increased compared to a wild type plant.

Please add the following new claim.

56. (New) An isolated nucleic acid molecule encoding a TNHX transporter polypeptide or a PNHX transporter polypeptide, or a fragment of a polypeptide having Na^+/H^+ transporter activity that provides increased salt tolerance in a cell, comprising [SEQ ID NO. 1].-